

WEATHER ON THE NORTH PACIFIC OCEAN

By WILLIS E. HURD

Atmospheric pressure.—On an average, there were two great centers of pressure activity on the North Pacific Ocean during April 1941. The more important feature was the abnormally deep Aleutian Low which, fed by a succession of higher latitude cyclonic depressions, attained an average depth of 996.8 millibars (29.44 inches), at Dutch Harbor. This value is 11.7 millibars (0.34 inch) below the normal of the month. Pressure was very low as far east as Kodiak, but from Juneau southward to Mazatlan, barometer means were only slightly below normal. In waters off central California, owing to the movements of several disturbances, pressure was moderately low for the month, the average at San Francisco being 3.0 millibars (0.09 inch) below the normal. The North Pacific anticyclone was central in the general vicinity of Midway Island, where the mean barometer, 1,021.9 millibars (30.18 inches), was 1.9 millibars (0.06 inch) above the normal. In the extreme southwestern part of the ocean, the spring condition of low pressure, following the warming up of the adjacent land surface, was beginning to appear.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Pacific Ocean and its shores, April 1941.

| Station | Average pressure | Departure from normal | Highest | Date | Lowest | Date |
|----------------|------------------|-----------------------|-----------|------------------|-----------|--------------------|
| | Millibars | Millibars | Millibars | | Millibars | |
| Barrow | 1,020.4 | +1.8 | 1,039 | 18 | 1,009 | 7 |
| Dutch Harbor | 996.8 | -11.7 | 1,022 | 17 | 975 | 11 |
| St. Paul | 1,000.5 | -8.3 | 1,025 | 17 | 984 | 22 |
| Kodiak | 998.7 | -8.8 | 1,018 | 17 | 982 | 7 |
| Juneau | 1,012.5 | -2.1 | 1,033 | 16 | 995 | 4 |
| Tatoosh Island | 1,015.2 | -0.7 | 1,026 | 17 | 994 | 4 |
| San Francisco | 1,014.6 | -3.0 | 1,025 | 16 | 998 | 10 |
| Mazatlan | 1,011.4 | -0.8 | 1,013 | 1, 7, 15, 16, 26 | 1,008 | 24 |
| Honolulu | 1,017.6 | -0.4 | 1,024 | 1 | 1,012 | 22 |
| Midway Island | 1,021.9 | +1.9 | 1,027 | 6 | 1,015 | 22 |
| Guam | 1,011.1 | -1.1 | 1,015 | 3, 7 | 1,009 | 17, 25, 26 |
| Manila | 1,009.8 | 0.0 | 1,014 | 1, 8 | 1,008 | 14, 15, 19, 24, 26 |
| Hong Kong | 1,012.2 | +0.3 | 1,022 | 6 | 1,005 | 25 |
| Naha | 1,014.6 | +1.4 | 1,024 | 7, 8 | 1,009 | 20 |
| Titijima | 1,016.0 | +1.1 | 1,025 | 3 | 1,007 | 23 |
| Petropavlovsk | 1,009.9 | +0.8 | 1,027 | 19 | 986 | 4 |

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Cyclones and gales.—At the close of March a disturbance of some intensity was causing stormy weather over the eastern third of the California-Hawaiian routes. On the 1st and 2d of April the disturbance moved northward with lessened intensity, and a cyclone from the Aleutian region, traveling rapidly in a general southeasterly direction, lay on the 3d and 4th off the northwest coast of the United States. As a result of the two lows, fresh to strong westerly to southerly gales were experienced by coastwise steamers off Oregon and southern Washington during the 2d to 4th, while farther southwestward, between California and the Hawaiian Islands, westerly winds of force 8 occurred on the 3d and 4th. The strongest wind due to the storm was a west gale of force 11 experienced during the early morning of the 3d, near 38° N., 149° W.

On April 9 a further cyclone appeared to the westward of Oregon, causing local gales, with the highest reported of force 9, near 43° N., 135° W. The storm lay close off the coast on the 10th. The highest wind observed in connection with it on that date was of force 10, reported by the American S. S. *Manulani*, in 36°30' N., 126°42' W. On the 11th the cyclone entered California, but as late as the morning of the 12th strong winds occurred along the

coast, the American S. S. *Matsonia* reporting a northwesterly gale of force 9 a few hours out from San Francisco.

On the 15th to 18th strong winds, at times attaining gale strength, again disturbed our west coast. Off northwestern Washington the higher winds, of force 8, were from the west, but off the middle California coast, they were northwest to north. The strongest wind reported at sea was from the north, of force 9, experienced on the 16th by the American S. S. *Makua*, in 37°30' N., 123°48' W. These winds occurred on the eastern slope of the oceanic high, then abutting upon the continent.

In middle Pacific longitudes known gales were few. The stormiest period was about the 8th to 10th, with gales, apparently localized, rising at times to force 10. On the 10th and 11th a cyclone of considerable depth extended from the Bering Sea to the southward of the 40th parallel, and on the 10th the U. S. A. T. *Meigs* had a west gale of force 10 and the lowest barometer reading reported for the month, 971.9 millibars (28.70 inches), near 41° N., 175° E. Much farther eastward on that day the American M. S. *West Cusseta* had a southwesterly gale of force 10, connected with the same storm, near 50° N., 155° W.

Early in the voyage of the M. S. *West Cusseta* from the Orient toward Vancouver, on April 3, the vessel entered a cyclone to the eastward of the Kuril Islands. From about 6 p. m. of the 3d to about 8 a. m. of the 4th, and beginning near 45° N., 163° E., she was under the influence of northwesterly winds of force 11, lowest barometer 983.7 millibars (29.05 inches). This condition of storminess was by far the most important reported by ships during the month from the extreme western part of the ocean.

Fog.—Very few reports of fog were received. Among the most interesting was one from a vessel that encountered fog on the 21st northeast of the Ogasawara (Bonin) Islands and did not entirely leave the fog area until the 24th, near 36° N., 161° E. On the 28th fog was observed near 40° N., 170° W., and on the 8th to 13th, over a region extending southwestward from about 40° N., at 133° W., to 33° N., at 157° W. The occurrences were on the 8th to 10th on the western half of the region, and on the 11th to 13th, on the eastern half. The only near-coastal fog reported was on the 27th, west of Washington.

RIVER STAGES AND FLOODS

By BENNETT SWENSON

The precipitation pattern during April followed quite closely the trend of previous months, the eastern part of the country and the far northwest being quite dry while from the central Mississippi Valley westward and southwestward precipitation was generally above normal. Temperatures were well above normal over all sections except the far southwest.

Excessive rains occurred in Arkansas, southwestern Missouri, southeastern Kansas, and eastern Oklahoma during the middle of April. Flooding was severe locally in this area and in the main reaches of the Osage, Gasconade, and Neosho Rivers. Six lives were reported lost due to flooding in the Ozarks region. Floods of less severity were experienced in the lower reaches of the Missouri and Arkansas Rivers, and in the White River.

River stages were high in the upper Mississippi River with flooding in northern Minnesota and stages slightly above flood stage in the Mississippi River from Keokuk, Iowa, to Louisiana, Mo. Slight flooding occurred in some of the streams in the eastern Carolinas. Stages continued high in Texas, the Southwest, and in the Sacramento Basin with some flooding.